New proposal of flap drawing for the extraction of the third mandibular molar semi-included.

Cogswell triangular flap modified and transposed.

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New proposal of flap drawing for the extraction of the third mandibular molar semi-included: Cogswell triangular flap modified and transposed.

OBJECTIVE: The study proposes a new flap drawing derived from the modification of a triangular Cogswell flap to treat a semi-included third molar.

MATERIAL AND METHOD: Two groups of patients underwent surgery: in the study group the new flap proposal was carried out whilst in the control group the triangular Cogswell flap was used. The gingival tissue and the periosteum were detached and the extraction technique was standardised for all the cases.

RESULTS: At 7 days and at 14 days from the operation, the results showed a statistically significant difference in the increase in primary intention healing in the study group whereas no statistically significant difference was encountered between using the innovative flap or the triangular Cogswell flap in terms of swelling.

DISCUSSION: The patients who underwent the innovative flap operation presented an increased percentage of primary intention healing compared to the patients who underwent the baseline method. As known from the international literature, a correct operational conduct aims at reducing surgical trauma as much as possible in order to limit the immediate and delayed consequences of surgery. Nevertheless the lengthening of healing times also leads to an increase of probability that post-operative complications and worse quality of life for the patients arise.

CONCLUSION: The Cogswell triangular flap modified and translated represents a new method available to the oral surgeon, useful in soft tissue management for the extraction of semi-included third mandibular molars. Simple to carry out, it promotes primary intention healing with absence of an increase in complications such as swelling²⁶⁻³⁰.

KEY WORDS: Cogswell triangular flap, Mandibular molar, Oral surgery

Introduction

The extraction of the third molar is the most frequent intervention in oral surgery¹⁻⁵. The dysodontiasis of the third mandibular molar generally appears between 18 and 24 years with a large variability⁶⁻³. The third molar is partially or completely included because of lack of space, retention caused by other teeth and their abnormal original position⁴⁻⁶. The incidence of dysodontiasis is also variable taking into account the population of reference, and it seems to be increasing because of the changes in the diet towards soft foods that requires less use of these teeth⁷⁻⁹,¹⁰.

Aim of this study is to verify that a new kind of flap derived from the modification of the triangular Cogswell flap in the third molar surgery, permits the healing for first intention, comparing the wounds of first intention at 7 and 14 days with those obtained with the Cogswell triangular flap and the quality of life of the patients operated taking into account the parameter post-operative oedema registered at 2, 7 and 14 days of intervention.
Short review of the possible flaps

**Triangular Flap**

Indicated in more complex surgical situations, this flap consists in a disto-vestibular releasing incision identical to the one of the marginal flap to preserve lingual nerve; the difference is given by the second releasing incision of the distal surface of the second molar directed mesially and towards to the mucous-gingival line, creating with this an angulation of 135 from the rear.

**Laskin Triangular Flap**

The first incision is realised at 2 cm between the internal and external oblique line distal to the second molar and continues as intrasulcular to the distal surface of the second molar making a releasing incision on Cogswell Triangular Flap.

The first incision is realized from the gingival sulcus distal to the second molar, in correspondence of the disto-lingual cusp, and it is directed distally and vestibularly for almost 2 cm; another intrasulcular cut interests the whole buccal surface of the second molar (gingival papilla excluded), and then it continues distally in lingual direction until encountering the other cut at almost a half centimeter behind the second molar.

**Material and Method**

The sample at the beginning of the study was characterised by two groups of twenty people. In each group there were ten male and ten female patients. The average age was of 25 yrs old in each group. The first group was treated with Cogswell classical flap and the second one with the Cogswell modified and translated flap. The categorical variables are expressed as number of cases. The continuous variables are expressed as average (SD) (Table I).

We report in the following table the demographic characteristics of the sample at the beginning of the study.

| Table I - Sample characteristics: forty patients divided in two groups were threated. The first group included ten men and ten women threated with the Cogswell classic flap while the second included ten women and ten men threated with the Cogswell modified and translated flap. The average age of each group was of twenty five years of age. |
|---|---|
| | Cogswell classicaln=20 | Cogswell modified and translatedn=20 |
| M/F | (10/10) | (10/10) |
| age (yrs) | 25.7 (3.2) | 25.4 (3.1) |

**Surgical Protocol**

After the disinfection of the oral cavity with a mouthwash based on clorexidin 0.20% for about one minute, the patients underwent to local-regional anaesthesia with articain 1:200.000 with nerval block anaesthesia at Spix thorn and subsequently it was realized to them a strengthening plexus anaesthesia of the buccal nerve with Articain 1:100.000. Then in the patients of the study group it was used the Cogswell modified flap and in the patients of the control group it was used the Cogswell triangular flap. Therefore the gingival tissue and the periosteum were detached.

From here the extraction technique was standardised for all the cases, in the group of study and in the group of control, with the realization of the vestibular osteotomy of the third molar until evidencing the furcation of the
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dental element, subsequent vestibular odontotomy, dislocation, extraction of radicular system and alveolar revision Incision for the primary flap. Therefore the post-extractive cavity was medicated with fibrin sponge dipped in patient’s blood and antibiotic (rifampicin).

Behavioral post-surgical protocol recommended to the patients: absolute rest in the armchair for two days and if lied down to put more pillows under the head to
maintain this higher than the chest; not to spit and not
to perform rinse for 24 hours for not removing the clot,
not to brush teeth and to blandly rinse with chloridrate
clorexidine in concentration of 0.12% once a day begin-
ning from the day after the intervention; ice applications
in alternate half hours for the first 12 hours; liquid and
cold diet for the first 24 hours.
Photographic control at 2 days, and at 7 days simulta-
neously to the suture removal, and finally at 14 days, for
the evaluation of the surgical wound state and oedema.

**Criteria of recovery evaluation**

The wound healing is evaluated exclusively by an objec-
tive exam of the macroscopic morphologic aspect of the
wound in its healing phase.
At 7 days, when the wound shows with margins per-
fectly united as immediately after the apposition of the
sutures, it seems appropriate to define it as a wound
healing for first intention. Conversely, when the wound
shows opened, even for a little and even for a minimal
tract, it is considered as a wound healing in a phase of
second intention.
Since it is not uncommon that after the removal of the
suture points, the wound could open because of the deta-
achment from one to other of the margins, the wounds
were also controlled at 14 days. An intact gum, with an
uniform colour and a minimal depression was judged
healed for first intention; a gum that otherwise , of une-
ven colour and with the bottom of the cavity not com-
pletely riephitelized or with the aspect of granulation tis-
sue, was still judged in phase of healing for second inten-
tion.

**Statistical analysis**

The categorical variables are expressed as number of cases
(%), those continuous as average (SD).
To calculate the standard error of the estimation in a
very small sample size, it was utilized the Bootstrap BCA
(Bias Corrected Accelerated) method over 1000 resam-
ping.
To confront the proportions between the two groups
and the association, the Z test and Chi-square test were
utilised.
To measure the dependence between the two nominal
variables the Phi index of Pearson and the lambda index
of Goodman and Kruskal were utilized.
There were considered statistically significant results asso-
ciated to a p< 0.05.
For all the analysis it was utilised the software SPSS (ver
16.0) e Stata (ver.9.0).
In this first analysis we are going to verify the possible
meaningful variation of the proportion of those who heal
for first and second intention in the two groups.

### Results

At 7 days from the intervention the subjects that were
operated with innovative methodology heal in the most
part of the cases for first intention (0.85 vs 0.35;
p< 0.05) and those who were operated with classic
methodology heal for second intention (0.65 vs 0.15;
p<0.05) (Table II).
By means of a chi-square test in the same units, we
obtain a statistically significant relation (p=0.003)
between group and kind of healing, to confirm what
obtained previously. The symmetry index Phi of 0.51
seems to reinforce the thesis of a discreet dependence
between group and kind of healing. In particular Lambda
index of Goodman seems to suggests a dependence of
the group from the healing state (0.50).
We verified, then, the eventual significant variation of
the proportion of those that heal for first and second
intention in the two groups at 14 days from the sur-
gery. Given the small sample size, the standard error was
estimated through the Bootstrap BCA method.

#### Table II - Proportion (IC95%) of healing at seven days: from the results obtained by the statistical analysis, at seven days from the intervention it appears that the majority of patients that were operated with innovative methodology, Cogswell modified and translated flap, healed in the most part of the cases for first intention (0.85 vs 0.35; p< 0.05) and that those who were operated with classic methodology, Cogswell classic flap, healed mostly for second intention (0.65 vs 0.15; p<0.05). As known from the international literature the first intention healing is the one most requested in dental and medical practice in general. The Cogswell modified and translated flap is a better alternative to take into account in semi-included third molar surgery.

<table>
<thead>
<tr>
<th>Healing</th>
<th>Cogswell classic</th>
<th>Cogswell modified and translated</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intention</td>
<td>0.35 [0.14-0.56]</td>
<td>0.85 [0.69-1.00]</td>
<td>0.0012*</td>
</tr>
<tr>
<td>II intention</td>
<td>0.65 [0.44-0.86]</td>
<td>0.15 [-0.009-0.31]</td>
<td>0.0012*</td>
</tr>
</tbody>
</table>

*Z test, p<0.05

#### Table III - Proportion (IC95%)of healing at fourteen days. The results at fourteen days from the surgery confirm the ones at seven days from the intervention: the patients who were operated with the innovative method healed in the majority of cases for first intention (0.55 vs 0.15; p<0.05) and those who were operated with the classic methodology hea-
led for second intention (0.85 vs 0.45; p<0.05). It is relevant to see that compared to the results at seven days the num-
ber of subjects who continued to heal for first intention was lower in both of the groups. Anyway there is still a statistical significant differ-
ence between healing and flap design in both groups.

<table>
<thead>
<tr>
<th>Healing</th>
<th>Cogswell classic</th>
<th>Cogswell modified and translated</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intention</td>
<td>0.15 [-0.009-0.31]</td>
<td>0.55 [0.32-0.78]</td>
<td>0.008*</td>
</tr>
<tr>
<td>II intention</td>
<td>0.85 [0.69-1.00]</td>
<td>0.45 [0.22-0.68]</td>
<td>0.008*</td>
</tr>
</tbody>
</table>

*Z test, p<0.05
Lo studio propone un nuovo disegno di lembo derivato dalla modifica del lembo triangolare di Cogswell nella chirurgia dei terzi molari mandibolari semi-inclusi. Due gruppi di pazienti sono stati sottoposti all’intervento chirurgico: il gruppo dei casi è stato trattato con la nuova proposta di lembo mentre il gruppo dei controlli con il lembo triangolare di Cogswell. Il tessuto gengivale ed il periostio sono stati scollati a spessore totale mentre la tecnica estrattiva è stata standardizzata per tutti i pazienti.

I risultati ottenuti hanno mostrato a 7 ed a 14 giorni dall’intervento una differenza statisticamente significativa nell’incremento della guarigione per prima intenzione nel gruppo dei casi rispetto ai controlli (Table IV).

**Discussion**

The dysodontiasis of third mandibular molar is a condition that requests a surgical therapy of extraction of the wisdom tooth, especially when this is semi-included, situation that favours the infection of the pericoronaric bag/lot and it is not possible that the dental element completes the eruption process.

The extraction, for different reasons, involves a period, more or less long, depending on the negative consequences that happen, of inability of the masticatory apparatus which affects negatively both the relational and working patient’s activities.

**Conclusions**

From what emerges from the analysis realized, it is possible to conclude that the subjects treated with the innovative method, at 14 days from the surgery presented a higher healing for first intention in percentage than of the subjects treated with classic methodology (Table IV).

In terms of abnormal swelling, it is not noticed any statistical significant difference, in any temporal instant between the two methods (Table IV).
gruppo di studio mentre nessuna differenza statisticamente significativa è stata riscontrata nell’utilizzo del lembo innovativo rispetto al lembo triangolare di Cogswell in termini di gonfiore.

I pazienti trattati con il lembo innovativo presentarono, quindi, un incremento nella guarigione per prima intenzione se comparati ai pazienti trattati con il lembo classico di Cogswell.

Come noto dalla letteratura internazionale, una condotta operatoria corretta ha l’obiettivo di ridurre il più possibile il trauma chirurgico in modo da limitare al massimo le complicanze immediate e tardive dell’intervento. Inoltre il prolungamento dei tempi di guarigione comporta l’aumento della probabilità di sviluppo di complessanze post-operatorie e peggiora qualità della vita per i pazienti.

Il lembo triangolare di Cogswell modificato e traslato rappresenta una nuova metodologia a disposizione del chirurgo orale, utile nella gestione dei tessuti molli per l’estrazione degli terzi molari mandibolari semi-inclusi.

Di semplice realizzazione, promuove la guarigione per prima intenzione, in assenza di incremento di complessanze come il gonfiore.

References


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